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ABSTRACT

To explore how fifth grade students used their oral language in small group discussions to remake information, a study set up a series of small group tasks in the curriculum areas of social studies, current events, science, poetry, and mathematics for one class of 28 Canadian students. Students were randomly divided into seven groups of four students each. The tasks were described on sheets that were distributed to each student. In addition, each task was explained to the small groups by the researcher who remained available for assistance. Each group's discussion was tape recorded and transcribed for further analysis. Findings revealed that each curriculum task placed different demands on the students' use of language: (1) in social studies the task of defining generally limited the expansion of thoughts; (2) the discussions in current events created the widest use of personal language strategies; (3) in science, the presence of concrete materials reduced the need for elaborated language use; (4) the poetry tasks produced restricted strategies for learning; and (5) the mathematics problems produced the language to learn, unique to the subject. (HOD)

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Using Oral Language to Learn in a Grade Five Classroom

by

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Introduction

A child, as she speaks, is discovering an external representation of reality that she has constructed from her internal thoughts. This externalization of thought through language assumes that the student is active in making sense of the world. Her use of language is a powerful means to accomplish the ordering, the clarifying and the questioning of reality. In school, however, "The pupil is faced with the task of reconciling his language to the demands of the school" (Searle, 1981, p. 164).

The child in school needs an opportunity to make sense of information and advance towards an articulation of her reality, constructed and reconstructed from the different curriculum areas. One means of creating this opportunity is through the use of small group discussions.

The Purpose of the Study

The purpose of this study is to explore how grade five students use their oral language in small group discussions to remake information in five curriculum subjects. The purpose of allowing the students to use their language without the presence of a teacher is to provide initial information about students' "active" making of meaning across the curriculum.

Major Questions Considered in this Study

1. What language do students use that indicates they are organizing their thoughts in order to learn?
2. How does the nature of the task and the subject-specific content affect the nature of the language used for learning?

Theoretical Base

Language and Thought

Britton (1970) states that:

> Language, we are told, is rule-governed behavior; as we represent experience in words we submit it to the rules, we bring to bear upon it the highly complex relationships systematically embodied in language itself. The process begins though, as we shall see, it does not end in talk (p. 28).

Language allows us to represent the world, to "map-out" our existence in it. The uniqueness and the variety of experiences in reality is constantly constructed and reconstructed to make sense to the individual. The language user, through talk, is able to order, explain, reflect upon, question, modify, and change reality. Whatever strategy is necessary to understand the world, language is the primary symbol system.

Vygotsky (1962) provides evidence that language is the element that frees the human mind from a biological dependence on development. The dialectical essence of Vygotsky's theory of language and thought ultimately requires that a human needs to be engaged in talk before authentic conconceptualization of reality can occur. In addition, Vygotsky confirms that language is the mediator for intellectual growth, and in the process of use he states that:

> . . . the relation of thought to word undergoes changes which themselves may be regarded as development in the functional sense. Thought is not merely expressed in words; it comes into existence through them (p. 125).

Everyday spontaneous concepts, according to Vygotsky, are a system of concrete and familiar concepts, mechanical memory, and involuntary attention, with the content derived from personal experience. On the other hand, scientific concepts are a system of abstractions, voluntary attention, logical memory guided by meaning, reflective awareness and intellectual control, with the content derived from scientific discipline. The movement between spontaneous and scientific concepts in the classroom context occurs as students use their language to learn. The spontaneous knowledge that the students bring to the task and the scientific knowledge that the school expects the students to learn need to be externalized through talking. It is through language that students order the two systems of thought into a system of meaning for themselves.

Other theorists also purport that students need to use their language to learn. Bruner's (1962) hypothetical mode of learning and Barnes' (1976) model of classroom knowledge suggest that the teacher needs to allow students to use their own language to organize, interpret and reshape the knowledge of the classroom curriculum. Barnes out-

lines a model of classroom knowledge in which the teacher's view of knowledge is reflected in the language interactions in the classroom. As Figure 1 indicates, the transmission teacher controls and dominates the students' use of language. On the other hand, the interpretation teacher provides opportunities for the students to engage in "active" reshaping of knowledge through language.

	Relationship	Transmission of Knowledge	Interpretation of Knowledge
1)	The teacher's view of knowledge	The Transmission Teacher... 1. Believes knowledge to exist in the form of public disciplines which include content and criteria of performance	The Interpretation Teacher... 1. Believes knowledge to exist in the knower's ability to organize thought and action
2)	What the teacher values in his pupils	2. Values the learners' performances insofar as they conform to the criteria of the discipline	2. Values the learner's commitment to interpreting reality, so that criteria arise as much from the learner as from the teacher
3)	The teacher's view of his own role	3. Perceives the teacher's task to be the evaluation and correction of the learner's performance, according to criteria of which he is the guardian	3. Perceives the teacher's task to be the setting up of a dialogue in which the learner can reshape his knowledge through interaction with others
4)	The teacher's evaluation of his pupils' participation	4. Perceives the learner as an uninformed acolyte for whom access to knowledge will be difficult since he must qualify himself through tests of appropriate performance	4. Perceives the learner as already possessing systematic and relevant knowledge, and the means of reshaping that knowledge

Fig. 1: Barnes' Model of Classroom Knowledge

The framework within which the interpretation classroom will function demands that the students use their language to learn. The interpretation model does not eliminate the role of teachers' language use. In essence, it presents a different framework from the usual view that tends to dominate classroom language.

Language Use in Classrooms

Recent research on language use in the classroom presents a uniform and dismal picture. From the earlier work (Bellack, 1966; Boydell, 1974; Delamont, 1976; Flanders, 1970; Jackson, 1968) it was found that the teacher controlled the amount of talk. The type of questions asked by the teacher and the students' responses limited the amount of talk by students to approximately 30 percent low quality, maintenance language. Other researchers (Barnes et al., 1969; Heath, 1981; Kluwin, 1979; Lindfors, 1980: Mishler, 1972; Rowe, 1974; Sinclair and Coulthard, 1975 and Winkeljohann, 1978) have pursued the

quality of questions and answers used by teachers and students. Generally, it was found that teachers ask factual questions that require only short answers from students. In most of the research findings, little or none of the language required clarification, elaboration or questioning from the students. Barnes and Todd (1977) call this format used by classroom teachers to solicit one-word, correct answers from the students the "information matching game" (p. 114).

Research into the language of classrooms indicates a limited opportunity for students to use their language for learning. Perhaps teachers structure the lessons in the various curriculum areas as a need to control knowledge and to provide a framework for language use without which teachers believe students cannot learn. Keddie (1971) investigated the classroom control structure and found that two "implicit" rules govern the interactions in a classroom. The rules are summarized as follows:

1) The teacher has an implicit knowledge of her pupils. This knowledge could be gathered from several sources, two of those being the amount and type of language used by a student. "Good" students give correct answers in response to teachers' initiating question.
2) The teacher decides what counts as knowledge to be made available and evaluated in the classroom.

Bernstein (1971) theorized that lower-class students did poorly in school due to their use of a restricted code of language, whereas middle to upper-class students succeeded in school because of their use of the elaborated code. However, several researchers (Labov, 1972; Searle, 1981; and Tootoosis, 1982) have found elaborated use of language in out-of-school contexts by lower-class students. Wells (1981) also found that at-home use of language was more conducive to learning than school interaction patterns. The parent-child interactions attended to a mutual making of meaning more so than those interactions of a teacher and students in the classroom context.

An Alternative

On one hand, the language for learning theories seem to indicate the necessity

that students use their language to learn. On the other hand, research appears to indicate that the quantity and quality of students' use of language for learning is extremely limited since the teacher tends to control the interactions based on a transmission view of knowledge. One alternative to teacher-dominated language use in the classroom is small group discussions. This provides an increased opportunity for students to expand and question curriculum tasks without the teacher controlling the language to learn. Martin et al., (1971) and Rosen and Rosen (1973) have found, as Barnes and Todd (1977) did, that:

> . . . children are often underestimated in that they possess skills and competencies which are rarely called upon in conventional classrooms. And this is where the impetus of small group discussion lies, for it is only in this situation that many of these skills are manifested. If they are not drawn on in class, it follows that the teacher may never know that these skills exist (p. ix).

This study attempts to discover what some of those skills and competencies are.

Procedure

The researcher set up a series of small group tasks in the curriculum areas of social studies, current events, science, poetry, and mathematics for one grade five class of 28 students. The tasks were described on sheets, copies of which were distributed to each student. The students in the class had very little experience in small group talk for learning in the classroom, yet the tasks involved continuations and extensions of curriculum content in that class. The students were randomly divided into seven groups of four students each. Each task was explained to the small groups by the researcher, who remained available for questions, assistance, and so on as required. Each group's discussion was tape recorded and transcribed for further analysis. The researcher's observation notes supplemented the tape recordings. Two sessions in social studies, current events, and science and one session each in poetry and math were recorded within a two-week period.

The school which contained this grade five class was located in a mixed socio-economic area, with housing ranging from government subsidized apartments to executive-

style homes. The students were of mixed ability levels and predominantly Anglo-Saxon Canadian, although six other ethnic groups were represented.

Analysis of Data

The Social Studies Task

The grade five social studies curriculum in Alberta tends to present socio-historical aspects of life that make demands on students' understandings that are removed in time, space and knowledge from the nature of the time, space and content of the task. The specific task in this study required the students to make sense of economic terminology (i.e. monopoly, supply and demand cost of production), and the relationship of these economic concepts to other factors surrounding the fur trade in early Canada.

Defining Concepts in Social Studies

Vygotsky (1962) mentions that "the analysis of reality with the help of concepts always precedes analysis of the concepts themselves" (p. 79).

The students, as they used their language to define concepts, are required to explore two aspects. One aspect was using their language to define a concept, the other is using their language to analyze the definition.

Besides little to no attempt to expand the definition, the students restrained their language by repeating the actual term to be defined. They appeared to keep within the structure of defining as demanded by the very nature of the task itself.

M: What does discovery mean? Okay, ah ... I think discovery means ... when ... when you find something you discover land or ... discover something.
C: No, when you find something ... that no one has before ... nobody knows it.
L: Yeah, you just discover it.
M: Does anybody else have anything else ... me....
C: What does exploration mean?
M: Something to do with exploring....
C: When you explore something ... like you explore a tree or something.
M: You go explore something ... something to do with ... street.

From the representative sample, it seemed that the students made limited use of language when analyzing a definition.

Depth of Understanding Through Talking

At times, the students did attempt expansion of conceptual meaning through using

their language to learn. When they went beyond the usual restrictive structure of a definition, there appeared an evolutionary aspect. For example, in dealing with the concept of monopoly, definitions were at first vaguely defined, e.g.:

M: Tell me what you think monopoly is.
C: Like, it's when you....
A. Selling and buying.

Further discussion deepened the original notion to include personal experience and moved the students closer to the idea of "ownership by one".

M: What do you think monopoly means? I think it means....
C: Like it ... the Monopoly game ... you buy some of this part....
A: Buying and selling and getting money.
M: Trading and....
L: Trading ... yeah.
A: Trading ... yeah.
L: Then buying and selling and getting money.

From there, the meaning of monopoly evolved into a complex of relationships. The students began to supply possible reasons for a monopoly; a "what if" scenario; and alternatives to business realities.

L: Yeah ... there's not going to be any people.
C: Well ... well ... if we have a monopoly ... right? We get all the furs if we have a monopoly and we can sell 'em and we have people working at stores ... say they're only allowed to sell two or three furs to a person ... they take all the furs to the market.
M: The more ... listen, the more you sell, the more money you make and plus you can go ... go and hunt and get some, right? So we ... so let them buy as much as they want ... because the more they buy, the more money you make.
C: Yes, but what if the animals become extinct?
M: What?
C: What if they go out of business ... become bankrupt or something?
M: We'd go hunting again....
C: Yeah, but we have to go away far away....

Unlike the limited language and learning for most tasks requiring defining, the example of defining monopoly, illustrated the depth of understanding through talking. In the talking process itself, the students moved from a vague understanding of a term to an elaborated and clearer definition. In other words, they talked themselves to clarity.

Shifting Strategies to Build Meaning

Vygotsky (1962) suggests that a new way of seeing things opens up new possibilities

for handling them. The task required the students to make guesses about the need for furs. As the students introduced new content to the discussion or offered the same content in different ways, the learning strategies they used to handle the new possibilities changed as the content changed. When the content of events and people was introduced, the discussion strategy used to work into that content was of a hypothetical nature, e.g.:

M: Okay, no, no, no, okay it says make some guesses about events people. Okay, let's make it ... some decisions about ... you know ... they....
C: Events....
L: Events....
M: That....
L: That occur.
M: Kathy.
C: Okay, let's say we're taking the train.

From this initial introduction of content and the subsequent learning strategy, the line of inquiry shifts accordingly. With the introduction of content about the French, Indians, and attitudes, the strategies included wondering, clarifying, and pretending. e.g.:

M: Can we?
C: Try ... take a boat.
L: I wonder where he took a trip to? I forget.
M: New Frances ... Canada. Ohhh (....) to be really....
C: We're the French.
M: When the French came.
C: When the French came.
M: Indians ... they were....
L: Different.
M: Different.
A: Felt different.
C: Yeah ... they thought....
M: You think, you think the Indians won the war against the French?
C: I don't know because the French....
L: I don't think so.
C: Took over their furs and ... everything else like that.
L: Yes.
M: But then....
L: Their wildlife.
M: We gave ... the French gave the ... the French gave the Indians a lot of stuff and they took....
L: Yeah, they probably traded with each other.
M: Metals and....
L: Yeah, horses and metal and....

C: Yeah, but they just wanted to ... did their own fish from caviar.
L: ... houses.
M: Yeah, but ... we wanted, they wanted fish.
C: And garbage like that.
A: How do you know if they discovered caviar (....) now?
M: They didn't ... they ... I don't think they knew caviar yet.
L: (....).
A: I know.
C: No caviar.
A: (Whispers) 'cause they haven't (....) got cold storage yet.
M: If they liked it ... a lot of people like caviar and it would have been all gone ... and then there would be no fish left.
Others: Yeah.
L: Right ... caviar's expensive too.

As the students expanded and refined new content, they began to interpret the content in new ways - which in turn led to new learning strategies. The discussion shifted from the French taking over the trading of furs, horses and metal, and finally into the French wanting fish and caviar. The students shifted strategies to maintain an active and sensible line of inquiry. They moved from the past into the present, and back to the past to maintain direct relevance to the fur trade topic.

In the following samples, once M and C realized the topic of caviar was making little or no contribution to the sense of the task, they used their language to shift the topic. This gave a new shape to their inquiry.

A: (Whispers) 'cause they haven't got cold storage yet.
M: If they liked it ... a lot of people like caviar and it would have been all gone ... and then there would be no fish left.
Others: Yeah.
L: Right .. caviar's expensive too.
M: 'cause all the fish....
C: Well, we'll have to get back to the questions.
M: Well, they probably didn't know.... Okay, let's see, some problems that occurred.

From the preceding samples of student language, the shifting of content and strategies occurred. It can be seen that the logical processes in the discussion were not strongly linked together although the shifting was effective for making-sense. In regard to Vygotsky's (1962) processes of higher psychological thought, the students appeared to be using their language to learn, i.e. each category introduces a new attribute to the content of the fur trade with weak bonds between each category. This

use of student language to learn is the first stage of abstraction. It is also the basis for later generalizations and relationships in true concept development.

Framing Knowledge to Make Sense

Some of the literature on language and thought has suggested that logical ordering of information by children occurs through syntactic connectors such as because, therefore, so, if, and so on. However, this clause analysis approach should not be regarded as the only indicator that logical ordering is operating for students. As the students used their language to make meaning of the curriculum tasks, they constructed frames of knowledge. This process of reconstructing several frames of reference built a web of understanding about a concept. The following sample deals with the "cost of production" concept in the early fur trade.

M used her language to create a first framing of categories for cost of production. Her conceptual and linguistic manipulations of "rising up" demonstrated the exploratory nature of M's beginning attempt to frame her thoughts. Additional relationships between prices, lazy people and going out of business added detail to the knowledge frame. Other participants' talk has been deleted to reveal more clearly M's knowledge framing.

M: Are they expensive? Are they rising or are they cheap rising?
M: No, I mean are they cheap rising up, expensive rising up or ... just rising?
M: Well, do you think they should rise? ... D'you think we should put a stop to it?
M: But what about the production? ... cost of producing or whatever?
M: It costs a lot to produce the furs ... they don't just ... they don't just tear them off the animal's back and give them to them ... right?
M: Yeah, yeah ... that's a lot of work.
M: Yeah, I don't but that's work ... and it ... so it should cost ... shouldn't cost.
M: Yeah, not....
M: Yeah, you can make it into a lot of stuff ... people are just too lazy to go out and ... so they think if they can buy something then.... If they can buy it then they're okay ... but if it gets higher ... but if the price gets higher then a lot of people are going to go hunt by themselves and then ... the fur trade will go out of business ... right? ... if the price gets too high.
M: No one's gonna buy, right?

In the second framing, M reshaped her knowledge by offering consequences and solutions for the three categories.

M: Okay, but anyway ... now let's see ... so the cost of production ... should be expensive but not too expensive because if you put it too expensive nobody's gonna

buy them and they'll go out and hunt them by themselves.

M: Okay ... so ... but if we ... we sell them we don't have some too expensive because then people will umm ... people will think (interruption) people will think that there'll be some cheaper they can go get them for free ... so I think we should put them at a ... in between ... you know, not too low and not too high, just like in between.

In the third reworking, personal knowledge played a role - the everyday experience of marks.

M: Just like in A....
M: Well, it's just like an A and a....
M: An A and a C ... A's ... like in a mark ... A and C we give 'em it ... it'd be a B ... like middle.

In the fourth framing of the concept, M explored the buying potential of money. Here, M's language indicated a clearer understanding of the concept she attempted to organize. She substituted the term "average" for the in-between cost.

M: Just rising ... not too high ... not low ... just in between.
M: Oh, that what ... the economy yeah ... we could ... we could ... whoever wants to buy them cheap or expensive or average can buy them ... whoever wants to hunt them can have them....

Next, M framed her knowledge in the present by incorporating the hypothetical cost of producing a chocolate bar. She added justification to her thoughts with a voice of authority - a girl from Paris.

M: Yeah, like a chocolate bar's reg ... always ... most forty cents ... ever ... regular stuff ... but if you go and get it there....
M: If you make your own chocolate bar it'd take ... about ... 'cause if you make a chocolate bar ... say you have to put ... cocoa in it ... right (others mmm), say, oh, you have to put cocoa in it ... so you have to put ... five table ... no, five teaspoons, okay ... of cocoa ... and you put ... chocolate chips.
M: You have to buy a thing of it so that's a lot of money ... right?
M: Mea ... 'cause they have to buy it because they make 'em one after another, so they should just ( ) expensive one.
M: You know what they charge you in Paris ... for a chocolate bar ... a $1.25.
M: A small chocolate bar like we have ... I know this girl who is from Paris who told me this ... she told me yesterday.

Finally, M framed the present reality of chocolate bars back to the past reality of the fur trade. This time she explored the costs with more detail and relevance to the trading aspect of the past.

M: But you get really good furs so you can trade two for one ... like trade two pieces of ... like....

M: Two pieces of fur for one big piece or something.
M: Yeah, but if we ... we could have just like ... you could trade ... like some ... one for one but you would trade ... you would trade one um....
M: Two small ones for a big one ... but you might trade two for one even if ... you might trade two big ... one, one ... one big one and one big one ... but one big one and small one ... one small one for one big one ... about the same size ... right?

From her initial framing of cost of production, M developed six different frames of knowledge about one concept. M used her language to organize her thoughts about the fur trade of three hundred years ago. There was limited use of one-word connectors. Neither did M talk in complete clauses or sentences. However, the six sections seemed to indicate her use of language to explore and organize the cost of production concept of the fur trade.

Current Events

The students were given questions about a current event, in this case, a nurse's strike and bus strike in their city. The nature of the task was both very closed and open. There were definition questions of a closed nature such as "What is a strike" What is injustice? By using the question "What do you think" on several of the tasks, it was intended to imply an open-ended frameowrk for the students to use their language.

The Use of Expressive Language

Expressive speech is personal, close to the speaker, but serves a function important to learning. It helps students explore concepts at too abstract a level. It also helps them make connections between personal experiences and scientific generalizations. Expressive speech is also a principal means of exchanging opinions, attitudes and beliefs. As Britton (1970) suggests that "it is in expressive speech that we are likely to rehearse the growing points of our formulation and analysis of experience."

Relieved of teacher control of their language, the students used expressive language to make sense of several aspects of the current events tasks. These purposes of expressive language are illustrated in the following excerpt from the current events discussion.

S: Well, a strike is, when a bunch of twits leave their job to make idiots of themselves ... in other words they want more money.
S: Well, if you were ... if ... what do you think a strike is?
C: Well, I think it's when, when ... a whole bunch of people who think they're strong ... carrying picket signs ... even out in cold weather and burning their ... not burning, freezing their long underwear and all sorts of junk like that.
Sh: It's depressing.
C: Yeah.
S: Well you mean that it's like when a bunch of idiots who are really wacko ... who are really wh ... who are really wacko ah....
C: Yeah, go on.
S: When a bunch ... of idiots you think ... when a bunch of people say that ... like....
C: Cow ... holy cow.
S: Stupid old government that is....

Narrative as a Way of Learning

In the course of everyday events, people use narrative to interpret events that have occurred in the past. Students, like adults, try to make sense of familiar and unfamiliar experiences. They use narrative to order these experiences. It is done by matching a verbal sequence of events to something that actually happened. Narrative involved a moving away from accounts of particular events towards generalizations upon events. To Britton (1970) narrive is important in that:

> To recount an event is to place a construction upon experiences, to interpret it: but of course, we interpret also more directly, explaining experience, commenting, bringing generalizations to bear upon it (p. 72).

Narrative from the Actual

In a typical sample of narrative, the student recounted an actual occurrence in relation to the bus strike. D attempted to make sense of the injustices caused by the local bus strike. Her evaluative statement within the narrative, "It's not really fair for him", allowed her to make a generalized comment from her sequence of particular events. D's recounting of the event helped her to interpret the task "Are bus strikes fair or unfair?" She implicitly decided that bus strikes were unfair in the following narrative:

D: My cousin couldn't get to school 'cause of the bus strike.

P: Lucky cousin.
D: And he couldn't get to my place ... actually he's smart ... and I was gonna' ... actually and I didn't want him to take a ( ) just ... he's gonna be in lots of trouble ( ). His dad was at work and his mom was (cooking) and she doesn't know how to drive yet. Well, she doesn't wanna' know how either so ... um it's not really fair for him so he couldn't ... and my mom wasn't about to ... get up ... get her coat on ... get outside in the cold air ... turn on the truck ... wait for it to warm up ,,, go over there for a half hour ... so ... decided not to ( ). That's all!
P: How far away does he live from his school?
D: From his school?
P: Yeah.
D: Don't ask me. I don't know. He lives over where I used to live.
P: Millwoods?
D: Well, he never even told me.

Although the definition and structure of narrative assumed a sequencing of past events, the deep structure of a narrative created a complexity of learning strategies. The narrative language that the students used in current events demonstrated that the sequencing of events was secondary to the use of narrative language to learn.

Narrative from the Imagination

The previous sample demonstrated that the narrative was a sequence of events that 'actually' occurred in the students' lives. However, a second type of narrative was also noted as a learning strategy. For want of a better term it is called "narrative from the imagination."

The creation of imaginative narrative allowed the students to filter the experiences about sensitive issues, without a fear of them actually happening. For example, the realities, the problems and the solutions of bus strikes arose from the students' explorations with their language. The issues that developed from those discussions became intense and frightening. The students talked about the dangers of hitchhiking with consequences of rape, robbery and murder.

S: Ah ... I'll tell something which I felt ... no ... when I was walking to school one day ... you know the bus strike ... stop down there ... well I....
C: I hate your stories.
S: Shhh ... no, but listen .. okay tell me what you think of this ... I saw a lady ... with two little kids ... I mean just little babies ... you know ... and she was standing out there and it was freezing cold out there and she was trying to hitch a ride....

C: Hitchhiking?
Sh: With three babies?
S: She had no choice.
Sh: With three babies?
S: Two ... two....
Sh: Well ... well they would have went wild in the car and the poor ... driver by the nose....
C: And pulled his hair out and then got kidnapped.
S: Ah ... what do you mean?
C: And maybe even killed....
S: Well, what I think ... what I feel....
Sh: I think she should listen to the radio....
C: I think hitchhiking is for the birds.
S: (Laughs).
C: 'cause it's dangerous ... you see ... 'cause....
S: (Unclear), (laughing).
C: Okay, okay, just shut up for a sec ... just shut up for a sec.
S: What I feel about the bus strike is that it's a really lousy thing....
C: Shut up! (shouts loudly).
S: ... and what every one of them needs is a good beep, beep ... and a slap across the face.
C: Good kick in the back end? (laughs).
S: And a lot of other things.
C: Okay, okay. Listen to this, "Don't worry children we'll get a ride soon waa, waaa, waaa" "voom", waaa, waaa ... want a ride lady? Yeh, please, waaa, waaa, waaa, waaa, waaa....
S: Oh mister! (cries).
C: Pow ... killed ... see they're all killed ... they're dead ... see and then....
S: Well ... well what could you expect if the bloody kid went like that ... (cries like a baby).
C: They blame ... they blame....
S: And started beating up the poor guy and tearing his car apart (laughs), well, just suppose....
C: And then they blame that guy for killing them.
S: Well, I would blame them, well just suppose....
Sh: There's this sexy girl on the side of the road in ... a sort of ... bikini....
S: That would really turn Sean on.
Sh: No ... then the guy stops ... and then the guy stops and....
C: And rapes her.
S: Goes whirly-twirly.

The students attempted to organize their thoughts about the possible horrors of hitchhiking as a consequence of the bus strike. The use of imaginative narrative seemed to keep the events under discussion at a safe distance from the storytellers. This type of narrative was used by several groups to make sense of the issues surrounding strikes.

The Language of Comparing

A common feature that emerged in the discussions about strikes and justice was the use of comparison. When the task required the students to decide if certain groups,

i.e. bus drivers and nurses should strike, the common strategy was to compare these workers with other jobs. The students compared government workers, beer producers, teachers, airplane pilots, telephone operators, steelworkers and so on to the world of bus drivers and nurses.

The following is typical of how the comparison of two types of workers lent justification to the students' position on the issues.

M: But you see ... you're talking about is that mmm ... no just listen. Okay, compare a cashier ... register ... cashier person that works full time ... 24 hours and....
P: Think of the calluses on the fingers.
M: But just listen.
P: Yeah, I know but (unclear).
M: Let's compare it to the nurse. If you want to be a nurse you save lives being a nurse ... right? You save lives being a nurse right?
P: Yeah.
M: And you have to study for a lot to be a nurse. For a cashier you just sorta; keep on ... they give you the money for the food and everything. That is an easy job but not (right) really once you compare it to five years difference.
P: I know.
M: Because it only takes you about two years or something to be....
P: To be a cashier.
M: Yeah, but the cashier has to memorize the numbers and everything and it's hard to do it.
K: So if she's going like that really slow ... then the customer's gonna go "Come on, hurry up, I wanna' go" and everything.
M: And they're ... they're gonna' go outa' business or something. But a nurse saves lives, right? Because you know....
M: Pam you couldn't walk into a shop and start doing cashier and serving people ... even if you were older and if you never touched the thing, you would never know how to do it ... right? Because it says sub-total ... say you have to take percent off ... like it's 40% off ... you don't know how to do all this stuff right ... you have to study it.

Comparing the two jobs required a detailed analysis by the students. The explicness, hardships, length of training and job-specific skills of each type of worker supported the students' understanding of the issues.

Science

The science sessions were to determine the students' use of science terminology and concepts which the students had studied during regular science lessons. The students worked with concrete material. The twigs of plants were distributed to each group

along with a task sheet. The tasks required the student to describe the parts of a twig, arrange them from youngest to oldest and also talk about the purposes of a twig's parts.

Limited Elaboration

One of the first notable features about the students using their language to learn in this type of science lesson was the sparse use of elaboration of language. The reason for this limited elaboration of language could be any one of several reasons. Perhaps they felt there was no need to be explicit as the concrete material was present. Secondly, in regular classroom lessons, science may tend to lend itself to a pseudo-discovery approach. In other words, the students may just need to give one-word answers using subject terminology only. Finally, the students may tacitly understand that the language of science is limited to a specific use of language compared to other curriculum areas. However, there were certain patterns that existed in the students' use of language to learn about scientific concepts.

Use of Similes

In an attempt to understand the different parts and purposes of a plant, the most common use of language to learn was similes. While describing appearances or function of different parts of a plant, the students created sensory images with their language. When the use of a simile failed to clearly aid in the description of structure or function, the students seem to revert to a use of vague vocabulary such as 'thingie', 'stuff', 'whatever', 'kinda', 'sorta' and other indistinct words.

K. It smells horrible ... these flowers on this plant are like roses ... they're ... sorta' shaped like roses.
P: They look it ... but they're sorta' long.
K: Like ... okay, we're gonna' go on to number B ... okay this plant ... has like berries on it ... sorta' like berries....
M: It looks like a peppermint stick with fern leaves on it ... no peppermint sticks have little....
P: It smells nice ... it's an okay smell and it's soft leaves and it's kinda' long stemmed....
M: This looks like ... um ... this looks like a....
P: This is in Box B ... number ... it's got buds ... it's got leaves and it's got pinky things on the end ... and it's got a furry leaf on the middle of it....

The students used other sensory images besides sight. Senses were called upon to understand the other sections of the task such as texture and smell. Some actual examples from the students' discussions that reveals the sensory aspect of learning about nature are as follows:

1) Feels like a scrambled egg; 2) The leaves are kinda' like sticky; 3) Smells like Vicks up your nose; 4) At the top it looks like bull horns and . . . and one looks like three bulls horns; 5) It has this porcupine thing at the top . . . that thing . . . what is this? A Pine cone . . . ah; 6) The leaves are . . . um . . . like ferns. . . .; 7) But they're not flowers. They're sort like . . . like those weeds . . . that are sorta like fox tails.

The students' language indicated a lack of explicitness in discussing the parts or purposes of plants. However, the nature of the task and the presence of concrete material seemed to demand the use of similes to learn.

Spontaneous and Scientific Concepts

Two examples of talking their way into higher level meanings and into using scientific terminology occurred with the students' attempted understanding of sap and bud. In the case of sap, which was located on several samples of twigs, the students noted sap as a feature of a plant but never used the scientific word. One group noted it as:

K: It's hard with jello-orange stuff on it.

while another noted in confusion between sap and water that:

J: And sometimes they're slimy and there's guk all over them ... yeah.
C: Yeah, it's water, not slime ... err ... it's slime.

and later in the discussion:

J: It's kind of sticky, it has this kind of syrup but ... they leave a coating on your fingers....

The groups never reached a full understanding of what sap is. They seemed to fail at transferring the terminology they had learned in regular science lessons to the reality of what sap actually looks like. It appeared the students maintained a "school knowledge"

about sap but were unable to use the terminology for action knowledge (Barnes, 1976, p. 79)

Some groups had difficulty deciding what are buds, what are seeds, what are cones or whether all three names are actually the same part. One group, when trying to order the twigs from youngest to oldest, had difficulty defining what part of the twig is actually the bud. They used a variety of strategies to try to determine what is a bud.

A: What is the bud on this sucker?
L: Bud ... that's a....
J: Hey! This is a seed ... hey.
L: I want to touch it.
J: There's seed in here ... those yellow thingamajigs.
S: Those are flowers, you dummy.
J: They are not ... see that's a bud ... yep.
L: That's a bud.
S: No it isn't, look ... look.
S: Just the buds ... and also there's one other thing here that was buds and it had a red thingamajig on it and there were little white pods.
L: No, that isn't it.
J: That's what I said to the rest.
S: But you need the seeds to start the pods.

The students' language indicated they had learned the terminology for the part of the plant called the bud, but had difficulty determining what feature of the plant is a bud. At one point the terminology even changes and the students are using bud, seed and pod interchangeably.

The only time that formal scientific terminology was used is when two different students used the names sepals and pistols to describe the flowering parts of a bud. J and C used examples of scientific terminology in the following:

J: Sometimes when they're dried out you can open them up and there's little sepals on it ... and sometimes they're slimy and there's guk all over them.

and also:

S: See look ... see ... it opens up ... it's ready to open ... we really shouldn't do that.
C: That's a pistol.

As the discussion proceeded, solutions began to appear as S asked to "go to the library to find a book on growth and stuff and find out?" L and J suggested they move

on to the next question. When L mentioned that she has a point to make, S summarized the whole conflict in stating "all of us have a point to make." When the book offered no solution to the conflict, the final solution was determined by S's decision to place "the buds here" (first) and "the flowers here" (last). The conflict ended as follows:

S: Okay. First of all ... okay, if we can't find if (unclear) grow things or something like that what we'll do is we'll agree on both ... and both ... and that ... and at least one of us will be wrong....
J: Okay let's ... can we go on to the next question? I'll read it.
L: Yes, but I have a point to make ... see.
S: All of us have a point to make ... your point is that the seed came first ... and that you are right in that but my point is that (whispers) it came last....
L: But it says in the book ... in the book....
S: The tree came before the seeeeed ... okay, I'll read the next question. Well, the oldest to the youngest isn't even in the book ... the oldest one....
A: Let's go on to the next question.
S: Okay, okay, okay. We're just going to put the buds here ... and the flowers here.

It appears from the science discussions and the other subject area discussions that when conflict arises within the group, the use of language became important to reconstruct as well as construct a more elaborated sense of understanding and a valid use of language to learn. Although there was confusion between spontaneous and scientific knowledge, the students used their language to weave the two systems together. This process moved the students towards a synthesis of the concrete and the abstract concepts. A movement that narrowed the gap between actual information and school language.

Intangible Scientific Information

Although the students in the science discussions are handling concrete material, there are certain aspects of the task that require the students to make sense of intangible scientific information. In scientific formulation, one of the difficulties for students supposedly engaged in the "hands-on" approach of science is that many of the concepts are intangible or abstract. In the case of the regular classroom lessons on plants, the students used concepts, like carbon-dioxide, minerals, and reproduction, that they can not experience as the concrete concepts of buds, flowers and seeds.

The following section of student language shows that the group shared an understanding of the task required. The passage is mixed with scientific terminology of the subject and the spontaneous language of the students.

P: The purpose of this part ... the stem is for like ... so that ... holding leaves ... the stem ... is like for the roots when it goes out into the ground right? ... and it goes out like this right? ... then the root can go out ... and it can bring oxygen ... not oxygen ... mmm ... it can bring....
K: Food ... food ... from the earth ... into....
P: The leaves to make the leaves grow ... it grows these little long green things ... things....
K: Those are acorns.
M: Those aren't acorns ... those are pine cones. Flowers (laughs) these flowers are little white flowers ... they carry ... I forget. Here Claude.
C: Ah ... the stem carries food to the end ... and minerals....
P: Minerals?
C: Not mine ... carries foods up to the....

Poetry

Repeating the Lines to Find the Meaning

The task in poetry was to interpret three poems from a photocopied sheet. Each group of the poetry sessions used the same techniques to order its thoughts about the poems. Sometimes the poems were read over and over in their toality. Other times, a group member would read a line over. This constant repeating of the poetry seemed to this researcher, a complex technique to explore the meaning of the poems by intonation and rereading.

As the students attempted to establish interpretations of the poems, in their own words, it became evident that the students had some difficulty in using exploratory talk Several possibilities might exist as reasons for these difficulties in using language to learn about the poems:

1) Perhaps the peoms were far too removed from the linguistic and experiential resources of the student.
2) Perhaps the constant repeating of the poetry was sufficient to the students' intuitive understanding arrived at through dramatic interpretation.
3) Perhaps because of previous poetic experience in school the students felt that

the nature of poetry required closed answers instead of an ambiguous, open, and personal variety of responses.

4) Perhaps the students were not able to interpret the particular symbolism used in the poems.

The re-reading of parts or the whole of a poem with different intonation each time was a student technique to get at meaning.

Informal interviews held a week after the final taping session exposed a possible reason for the limited organization of student ideas in poetry. One student voiced the opinion of several students when she stated:

> "Poetry was the hardest work. Like it, like ah ... you know ... well you just knew what they (the poets) were trying to say but you just didn't have the words to say what they (the poets) meant".

Mathematics

The Problem-Solving Approach of Mathematics

The task in mathematics was intended to present conflict among group members. This conflict was to arise from the problem-solving aspect of the task. To solve any of the problems presented, the students could not engage in simple mechanical functions of addition, subtraction, multiplication or division. To solve the problems the students would need to use the langauge of mathematics to interpret and manipulate several functions before the correct answer could be reached. One example of the task in mathematics is "Our police department has 15 cars and motorcycles. The total number of wheels on the cars and motorcycles is 42. How many police cars does our police department have?"

A detailed analysis of the mathematics transcripts revealed no use of personal language. Also, the students' language revealed no variety in content or strategies. The language was extremely task-oriented. To get the job done, the students used the quantitative language of mathematics. The students explored several combinations of mathematical functions demonstrated as typical in the following passage:

J: But you can do it any way ... you can get it with a whole bunch of different answers.
H: There are seven police cars and seven ... umm....
J: But you can get a whole bunch of answers....
G: So you don't know ... seven times six is forty-two so there must be seven blah bas ... and....
J: Seven times....
H: There's seven ... forty-two wheels ... so if you get ( ) seven....
G: Seven times seven is forty-nine.
H: So how many police cars does the police department have? ... seven.
J: Oh ... oh ... there's twenty-one thingmajigs all together....
H: No, there are forty-two ... ah ... wheels.

The students' language to learn remained on task. The nature of that task seemed to restrict their language to a subject-specific use of terminology.

Conclusions and Discussion

Given an opportunity to use language to learn, the students of this study provided ample evidence to indicate the ordering of their thoughts through language.

Each curriculum task placed different demands on the students' use of language. In social studies the task of defining generally limited the expansion of thoughts. However, one example illustrated that depth of meaning was possible if the students explored a concept with their own language. The students' language also revealed the need to shift their thoughts while talking. The shifting of content and strategies brought order to the chaos and vagueness of their thoughts.

One unique and powerful use of language that emerged was that of framing knowledge to make sense. One student created six different pictures for one concept. The six framings allowed the student to develop an understanding of a concept removed in space and time from her present day understanding.

The discussions in current events created the widest use of personal language strategies. The use of expressive language, narrative, and comparison suggested that, from a theoretical standpoint, the students were in control of their language to learn. The use of the three types of language moved the students into higher levels of thought. They could move their thoughts from concrete to abstract, specific to general and per-

sonal to scientific. The students' language tended to be more elaborated and ordered in the current events than in the other four curriculum areas. Speculation is that the students' extensive use of expressive language, narrative, and comparison was the most conducive to learning.

In science, the presence of concrete materials reduced the need for elaborated language use by the students. The lack of explicitness was evidenced. The nature of the task and the transfer of scientific terminology to actual materials seemed to limit and confuse the process of talking to make sense. There was little use of spontaneous, everyday language. One strategy effective for learning was the use of similes. This enabled the students to create images of description without the use of formal terminology. In most cases, the transfer of scientific terminology to actual material confused the students' thoughts.

The poetry tasks produced restricted strategies for learning. To place some order upon the poetry tasks, the students continuously reread the lines. This repeating of the lines seemed to be the only means for learning available to the students.

The mathematics problems produced the language to learn, unique to the subject. The manipulations and operations needed to make sense of the problems remained in a quantitative mode.

In total, the students were constantly using their language to learn. They had alternative content and strategies available to them for making sense. They seriously constructed and reshaped their knowledge without straying off topic. Freed from the controlling influence of the ready-made meanings of a teacher, the students order their thoughts about the world by talk.

Implications for Further Research

The research into typical classroom language use has tended to present a rather dismal picture of restricted language to learn. More studies are needed that focus on students and teachers using language in ways other than that of the typical pattern:

teacher elicits student responds teacher evaluates

As researchers, we should consider exploring classrooms where students and teachers are sharing a negotiation of meanings.

Not until we have further information on the means and ways that students can use language across the curriculum will there be changes in typical classroom interactions. Also needed are studies that provide information on how the nature of curriculum content and tasks affect students' use of language to learn.

From this study, there are indications that students need to engage in extended dialogues with peers in order to learn. They are capable of using their language to learn. Are teachers aware of this?

Implications for Classrooms

If theory and research are strongly suggesting that students can and must use their language to learn, where are the practices to support this?

Students bring a wealth of meanings to the school and its curriculum. We must begin to respect and utilize those meanings. In turn, we must allow students' personal knowledge and language to weave into the formal knowledge and terminology of all school curricula. They need to use their language to explore and discover new meanings as well as reconstruct their presently held knowledge.

Language plays a critical role in the process of learning. So what seems necessary for elementary school language programs is major changes in policies that structure the programs. An extensive awareness by educators that increased use of student language develops learning beyond the present practices of most classrooms needs to be emphasized. In turn, alternatives and opportunities to use language to learn must be provided.

This study supports the need for change and the shift to student-teacher shared learning, especially by allowing students ample situations to use their language to learn in all curriculum areas.

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